UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK
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TOWN OF HEMPSTEAD,

Plaintiff,

Case No.: 16-cv-03652 (ENV)(SLT)

-against-

UNITED STATES OF AMERICA, et. al.

Defendants.

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PLAINTIFF'S MEMORANDUM OF LAW IN OPPOSITION TO DEFENDANTS' DAUBERT MOTIONS TO EXCLUDE TESTIMONY OF PLAINTIFF'S EXPERT WITNESSES

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PRELIMINARY STATEMENT

This Memorandum of Law is respectfully submitted by plaintiff, the Town of Hempstead ("Plaintiff" or the "Town"), in opposition to the motions, pursuant to Fed. R. Evid. 401, 403, 702 and 703, of defendants Northrop Grumman Corporation ("NGC") and Northrop Grumman Systems Corporation (collectively "Northrop Grumman"), to exclude the expert testimony of the Town's three (3) expert witnesses, William D. Merklin, P.E., Richard W. Humann, P.E., and Timothy D. Hazlett, Ph.D.[1] In an effort to deflect attention away from their liability in this case, the Defendants seek to distract from the merits of the Town's claims by questioning the qualifications and reliability of the Town's expert witnesses. However, as each of the Town's expert witnesses are qualified by knowledge, skill, experience, training and education, and their testimony is based upon sufficient facts or data and is the product of reliable principles and methods which have been reliably applied to the facts of this case, the Exclusion Motions have no merit and should be denied with prejudice in their entirety.

In this case, the Town seeks to recover the costs it incurred to remove hazardous substances from three of its public water supply wells used to provide drinking water to its residents in the Levittown Water District ("LWD"), known as wells 7A, 8A, and 13 (collectively, the "LWD Wells"). The source of the contamination at issue is alleged to be the commingled plume of

[1] Northrop Grumman submitted separate exclusion motions for each of the Town's three (3) expert witnesses. The other defendants, including the United States of America and the Department of the Navy (collectively, the "Federal Defendants"), Occidental Chemical Corporation ("Occidental"), and Covestro LLC ("Covestro") and Bayer Corporation ("Bayer") (collectively, the "Covestro Defendants" and all defendants as, "Defendants"), to the extent that they also seek to exclude the expert testimony of the Town's expert witnesses have done so in the context of the concurrent respective motions for summary judgment. For purposes of judicial economy, the Town submits the instant Memorandum of Law in opposition to all the exclusion motions by Northrop Grumman and, where necessary, also responds to arguments raised by the remaining defendants in their respective motions for summary judgment (all motions collectively referred to herein as the "Exclusion Motions").

groundwater contamination associated with the Northrop Grumman site and Naval Weapons Industrial Reserve Plant ("NWIRP") sites, owned by the Navy, in Bethpage, New York and the adjoining Hooker/Ruco site, owned at various times by Occidental and the Covestro Defendants, in Hicksville, New York. Over the course of the decades of its existence, the commingled plume of contamination has migrated off-site and has impacted the groundwater which serves as the source of drinking water for the Town. It was imperative for the Town to expeditiously have the contamination removed from its impacted water supply wells in order to keep those wells in service and to ensure the Town was able to provide drinking water to its residents in compliance with the applicable drinking water quality standards. At the recommendation of the Town's professional water supply engineering consultants, the Town installed, with the approval of the applicable regulatory agencies, packed tower aeration systems at the LWD Wells to remove the contamination in the source water, which has allowed the Town to provide drinking water to its residents in compliance with the applicable drinking water quality standards. The Town seeks to recover the response costs it incurred for the design, construction, operation and maintenance of the wellhead treatment systems for the LWD Wells and seeks declaratory relief for necessary response costs to be incurred for the operation and maintenance of the wellhead treatment systems.

STATEMENT OF FACTS

For a complete statement of the material facts and underlying evidentiary support in this matter, the Court is respectfully referred to the accompanying Declaration of Scott B. Fisher ("Fisher Decl.") and the referenced exhibits annexed thereto; the Declaration of John L. Reinhardt III ("Reinhardt Decl."); the Declaration of William D. Merklin, P.E. ("Merklin Decl."); the Declaration of Richard W. Humann, P.E. ("Humann Decl."); the Declaration of Timothy D. Hazlett, Ph.D. ("Hazlett Decl."); as well as Plaintiff's Rule 56.1 Statements of Additional Material

Facts ("Pl. Stmt.") related to each of the Defendants, all of which are incorporated herein by reference.[2] For purposes of judicial economy, the Court is also respectfully referred to the Statements of Fact contained in the Town's accompanying Memoranda of Law in Opposition to Defendants' respective motions for summary judgment.

STANDARD OF REVIEW

Federal Rule of Evidence ("FRE") 702 provides that, "[a] witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

(a) The expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
(b) The testimony is based on sufficient facts or data;
(c) The testimony is the product of reliable principles and methods; and
(d) The expert has reliably applied the principles and methods of the facts of the case."

Fed. R. Evid. 702. FRE 702 "codified the standard for admissibility set forth by Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993)." Cedar Petrochemicals, Inc. v. Dongbu Hannong Chem. Co., 769 F. Supp.2d 269, 281 (S.D.N.Y. 2011). When evaluating expert testimony, the Second Circuit has held that,

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[2] With respect to the Merklin, Humann, and Hazlett Declarations, "where an expert's affidavit provides evidentiary details for an opinion expressed in his expert report, those portions of his or her affidavit can be considered" in opposition to summary judgment. Lidle ex rel. Lidle v. Cirrus Design Corp., No. 08-Civ-1253 (BSJ) (HBP), 2010 U.S. Dist. LEXIS 67031, at ** 20-21 n.4 (S.D.N.Y. July 6, 2010); Hopkins v. AMTRAK, No. 08-CV-2965 (NGG) (RML), 2015 U.S. Dist. LEXIS 196952 at *3 (E.D.N.Y. Aug. 20, 2015) (same). The same applies to expert declarations submitted in response to Daubert exclusion motions. Phoenix Light SF Ltd. v. Bank of N.Y. Mellon, No. 2014-CV-10104 (VEC), 2019 U.S. Dist. LEXIS 197105, * 10 (S.D.N.Y. Nov. 13, 2019) ("declarations that 'merely amplify and provide more support for the opinions' are proper… including declarations that address concerns raised in a *Daubert* motion about the reliability and application of an expert's methodology."). That is because "[t]he purpose of an expert's report is not to replicate every word that the expert might say on the stand, but to convey the substance of the expert's opinion so that the opponent will be ready to rebut, cross-examine, and to offer a competing expert." Id., 2019 U.S. Dist. LEXIS 197105 at ** 21-22 (internal citation omitted).

> First, . . . Daubert reinforces the idea that there should be a presumption of admissibility of evidence. Second, it emphasizes the need for flexibility in assessing whether evidence is admissible. Rather than using rigid 'safeguards' for determining whether testimony should be admitted, the Court's approach is to permit the trial judge to weigh the various considerations pertinent to the issue in question. Third, Daubert allows for the admissibility of scientific evidence, even if not generally accepted in the relevant scientific community, provided its reliability has independent support. Finally, the Court expressed its faith in the power of the adversary system to test 'shaky but admissible' evidence, and advanced a bias in favor of admitting evidence short of that solidly and indisputably proven to be reliable.

Borawick v. Shay, 68 F.3d 597, 610 (2d Cir. 1995) (internal citation omitted). The "rejection of expert testimony is the exception rather than the rule." Cedar Petrochemicals, Inc., 769 F. Supp.2d at 282. That "principle is based on the recognition that 'our adversary system provides the necessary tools for challenging reliable, albeit debatable, expert testimony.'" Id. (internal citation omitted).

In determining the admissibility of expert testimony, "a district court must make the following determinations: (1) whether the witness is qualified to be an expert; (2) whether the opinion is based upon reliable data and methodology; and (3) whether the expert's testimony on a particular issue will assist the trier of fact." Lidle, 2010 U.S. Dist. LEXIS 67031 at *7. With respect to the issue of whether a witness qualifies as an expert, "courts compare the area in which the witness has superior knowledge, education, experience, or skill with the subject matter of the proffered testimony." Id. (internal citation omitted). In the Second Circuit, "most courts have liberally construed expert qualification requirements when determining whether a witness can be considered an expert." Id. Based on that standard, a trial court "must consider the totality of a witness's background when evaluating the witness's qualifications to testify as an expert." Id. at *8 (internal quotation omitted). A witness's practical experience and educational background are factors to consider and "one may be an expert solely based on one's practical experience

notwithstanding a lack of professional education or one's formal education despite a lack of practical experience." Id. at **8-9 (internal quotation omitted).

As to determining the reliability of an expert's reasoning or methodology, the factors set forth in Daubert include: "(1) whether the theory or technique relied on has been tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) whether there is a known or potential rate of error and the existence and maintenance of standards controlling the technique's operation in the case of a particular scientific technique; and (4) whether the theory or method has been generally accepted by the scientific community." Id. (citing Daubert, 509 U.S. at 593-94). The FRE 702 admissibility inquiry is "a flexible one" and the factors identified in Daubert "may or may not be pertinent in assessing reliability, depending on the nature of the case, the expert's particular expertise, and the subject of his testimony." Id. (citing Kumho Tire Co. v. Carmichael, 526 U.S. 137, 141 (1999)). As an example, "[e]xpert engineering testimony may rest on scientific foundations or on the personal knowledge or experience of the engineer." Lidle, 2010 U.S. Dist. LEXIS 67031 at * 10 (internal citation omitted). Contentions that the expert's assumptions are unfounded go to the weight, not the admissibility, of the testimony. Id. at *11 (internal citation omitted).

As to whether the expert's reasoning or methodology can be properly applied to the facts, expert testimony is "relevant if it is 'likely to substantially assist the average person in understanding the case – even if it simply explains facts and evidence already in the record.'" Id. at ** 13 (internal quotation omitted).

Here, it is respectfully submitted that the criteria for determining the qualifications, reliability, and relevancy of the testimony of the Town's expert witnesses is easily satisfied and, therefore, the Exclusion Motions should be denied with prejudice in their entirety.

LEGAL ARGUMENT

I. THE EXPERT TESTIMONY OF WILLIAM D. MERKLIN, P.E. SHOULD NOT BE EXCLUDED

Northrop Grumman contends that the expert testimony of William D. Merklin, P.E. should be excluded principally on the grounds that: i) Mr. Merklin purportedly did not conduct research relating to the source of the volatile organic compound ("VOC") groundwater contamination impacting the LWD Wells; ii) Mr. Merklin purportedly overdesigned the wellhead treatment systems to remove the VOC contamination from the LWD Wells; and iii) the opinion of Mr. Merklin on the issue of aesthetics is irrelevant under CERCLA. The remaining defendants join in those contentions. However, contrary to Defendants' contentions, Mr. Merklin is sufficiently qualified as an expert, his expert opinions are reliable, and his expert opinions will assist the trier of fact in this matter.

A. Mr. Merklin is Qualified to Be an Expert in this Action

Mr. Merklin is a Senior Vice President of D&B Engineers And Architects, P.C. (formerly known as Dvirka & Bartilucci Engineers And Architects, P.C.) ("D&B"), which has served as an engineering consultant to the Town's Department of Water ("DOW"), including the LWD. Expert Report of William D. Merklin, P.E., August 6, 2019 ("Merklin Expert Report"), p. 1 and Exhibit A thereto[3]; Merklin Decl., ¶ 1. Mr. Merklin has been employed with D&B since 1995 in various capacities, including as a project engineer, an associate, a senior associate, a vice president and a senior vice president. Id. He served as the Project Manager for the design and construction of the treatment facilities for the LWD Wells. Id. at ¶ 2.

[3] All exhibits referenced and cited herein are included as part of the Declaration of Scott B. Fisher, Esq. ("Fisher Decl.") submitted in opposition to the Exclusion Motions and the respective motions for summary judgment by Defendants.

Mr. Merklin is a Professional Engineer licensed in New York and California. Id. at ¶ 3. He has 30 years of experience in water supply engineering. Id. He attained a Bachelor of Engineering (Civil) degree from Manhattan College in 1989 and a Master of Engineering (Environmental) degree from Manhattan College in 1991. Id. Mr. Merklin manages the Water Supply Division and since 2016 has managed the Civil Engineering Division at D&B. Id. Mr. Merklin specializes in water supply engineering and has extensive project experience in master planning and design for water supply treatment. Id. He has designed and prepared plans and specifications for the construction of water supply wells, packed tower aeration systems ("PTAS"), granular activated carbon systems ("GAC"), advanced oxidation process, well house pumping stations, iron and manganese filtration facilities, water storage tanks, chemical storage facilities, booster pumping stations, distribution system piping, master plans and capital plans, annual water quality reports, and emergency response plans. Id. Mr. Merklin has served as the Engineer of Record for various villages and water suppliers throughout Nassau County, New York for more than two decades, including at least five public water supply districts. Id. at ¶ 4. He is an active member of the American Water Works Association and the Long Island Water Conference. Id.

Notably, D&B has designed and constructed over twenty (20) PTAS and GAC treatment systems for water suppliers in Nassau County, New York and Mr. Merklin has personally designed numerous water treatment facilities on Long Island, including PTAS treatment systems like those designed and constructed for the Town in this case. Id. at ¶ 5.

In fact, in New York v. Next Millennium Realty, LLC, 732 F.3d 117, 122 (2d Cir. 2013), the Second Circuit noted that, "[t]he Town hired Dvirka and Bartilucci ('D&B'), an engineering firm, to investigate. In November 1989, D&B confirmed the presence of VOCs in the water, including [TCE] and [PCE], likely carcinogens, and recommended the installation of a granulated

activated carbon adsorption system (the "GAC") to remove the VOCs." Thereafter, with the VOC concentration levels in the water supply wells rising, "[i]n May 1995, D&B proposed an air stripper tower – a packed tower aeration system" with was constructed between July 1995 and 1997. Id. The packed tower aeration system which D&B designed in Next Millennium Realty is substantially similar and functionally equivalent to the PTAS treatment systems it designed in this case for the removal of the VOC contamination from the LWD Wells.

Here, it is respectfully submitted that, based on his extensive knowledge, experience, and education, Mr. Merklin is unequivocally qualified to testify regarding the design, construction, and operation of water supply treatment systems in general and the PTAS wellhead treatment systems designed in this matter in connection with the LWD Wells. As was the case in Cedar Petrochemicals, Inc.. 769 F. Supp.2d at 284, Mr. Merklin "has substantial practical experience with the subject matter of this litigation and is thus likely to 'assist the trier of fact in arriving at the truth.'" (internal quotation omitted).[4]

B. Mr. Merklin's Opinions are Based Upon Reliable Facts and Data

If a witness is deemed qualified to testify as an expert, the court then determines whether the proffered testimony is admissible. Lidle, 2010 U.S. Dist. LEXIS 67031 at *9. That determination is based on whether the expert testimony is "grounded on sufficient facts or data that 'is the product of reliable principles and methods.'" Cedar Petrochemicals, Inc., 769 F. Supp.

[4] To the extent that Northrop Grumman suggests that Mr. Merklin's modest pedigree as an expert witness somehow impacts his qualifications to testify in this case (NG Memo. of Law in Support of Merklin Exclusion Motion ["NG MOL Merklin Excl. Mot."], p. 5), it is wrong since it has been held that, "[m]any of Defendants' objections to Miller's testimony, including that she does not hold an M.D. or Ph.D. degree (though she does have a master's degree) and that she has never testified as an expert before, go to the weight, rather than the admissibility, of her testimony." Sandler v. Montefiore Health Sys., No. 2016-CV-2258 (JPO), 2018 U.S. Dist. LEXIS 166438 *53, n. 11 (S.D.N.Y. Sept. 27, 2018) (citing Dover v. British Airways, PLC (UK), 254 F. Supp.3d 455, 459 (E.D.N.Y. 2017)).

2d at 284 (internal quotation omitted). "Expert engineering testimony may rest on scientific foundations or on the personal knowledge or experience of the engineer, and trained experts commonly extrapolate from existing data." Id. (internal quotation omitted). In addition, expert witnesses "need not have actually collected the data on which they base their conclusions in order to be credible." Id. (citing Gussack Realty Co. v. Xerox Corp., 224 F.3d 85, 94 (2d Cir. 2000)). Moreover, "[q]uestions over whether there is a sufficient factual basis for an expert's testimony may 'go to weight, not admissibility.'" Cedar Petrochemicals, Inc., 769 F. Supp. 2d at 285.

In Cedar Petrochemicals, Inc., the court noted that, "the experts have based their conclusions on reliable results from tests conducted by independent consultants and observed by representatives of numerous interested parties. The defendant does not seriously contend that these tests are unreliable, merely that their results are not sufficient evidence to support the experts' conclusions. But this argument goes to the weight, not the admissibility, of their testimony and reports." Id. Furthermore, "[t]he experts have not made conclusory assertions based on insufficient facts, but rather have made limited assertions tied directly to the limited evidence they had available to them" and the "experts have also plausibly explained why the uncollected data, while potentially enlightening, was not necessary to their analysis of when and where (as compared to why) the phenol became discolored." Id. (emphasis in original). In addition, "the experts based their conclusions on their own review of documents and the results of testing conducted by independent consultants." Id. The court concluded that, "although the amount of data available to the experts was not overwhelming, it was reliably obtained and sufficient to form the basis of admissible expert conclusions. Whether those facts are sufficient to render their opinions persuasive is a question for the finder of fact." Id.

Here, once the VOC concentration levels in the LWD Wells were approaching the Maximum Contaminant Level ("MCL") for drinking water in mid-2013, and since the continued operation of the LWD Wells was critical to meet the demands of the LWD and to ensure compliance with the drinking water quality standards, the Town solicited a proposal from D&B to determine the necessary treatment for removal of VOCs from the water source at the LWD Wells. Reinhardt Decl., ¶ 10.

In determining the appropriate type of treatment for removing VOCs at a public supply well, D&B would typically review (1) the concentrations of the VOCs; (2) the water quality parameters other than the VOC concentrations; and (3) whether the specific contaminants at issue can be treated with each of the common treatment methods. Merklin Decl., ¶ 12. Additionally, D&B would look to see if the source of the contamination could be determined to enable them to estimate what the maximum influent concentration may be. Id. at ¶ 13.

Here, D&B undertook an investigation to determine the source of the contamination impacting the LWD Wells in order to estimate what the maximum influent concentration might be at some time in the future for purposes of designing the necessary wellhead treatment to remove the VOC contamination from the LWD Wells.[5] Merklin Decl., ¶ 13. The focus of the D&B investigation was to determine the best course of action to remove as expeditiously as possible the VOC contaminants from the LWD Wells to ensure that the drinking water distributed from the LWD Wells complied with all applicable drinking water quality standards. Id. at ¶ 10. It was not to determine the source of the contamination for liability purposes. A water treatment facility should be designed to treat the highest possible future contamination concentration so that it will

[5] In the context of wellhead treatment systems, the influent would be the compound which is flowing into the raw water of the supply well. Merklin Decl., ¶ 13, n.3.

be effective for as long as necessary. Id. at ¶ 38. That approach is consistent with the requirements of the U.S. Government. The Unified Facilities Guide Specifications for the design of air strippers which is applicable to the Navy provide that, "[t]he first step in designing an air stripper is to determine the extreme operating conditions," which include VOC concentrations in the influent. Exhibit "100", Design Guide No. 1110-1-3, Department of the Army, Engineering And Design Air Stripping, Section 3-1, October 31, 2001 (made applicable to Naval Facilities Engineering Systems Command pursuant to Unified Facilities Guide Specifications, Section -02 62 13.00 10 Air and Stream Stripping, August 2018).

As part of its investigation, D&B utilized a third-party consultant, Environmental Data Resources, Inc. ("EDR"), to conduct a radius search of known environmental contamination sites within a two-mile radius of the LWD Wells. Merklin Decl., ¶ 13. That search identified the Northrop Grumman and NWIRP sites approximately two miles north, northeast of the LWD wells, as hazardous waste sites, where "[g]roundwater has been impacted at and downgradient of this site." Id. at ¶¶ 13-14. In addition, D&B also considered the Source Water Assessment Plan ("SWAP") reports prepared by NYSDOH and NCDOH for the LWD Wells, which indicated: i) that the historic land activities including industrial storage, discharge, recharge and dumping of contamination at the Northrop Grumman and NWIRP sites will impact the groundwater system that will ultimately reach the LWD Wells, and ii) that the direction of groundwater flow within the aquifer system to the LWD Wells is essentially due south to slight southwest. Merklin Decl., ¶ 16; Reinhardt Decl., ¶ 15; Humann Decl., ¶ 33.

That data indicated to D&B that the OU-2 plume emanating from the Northrop Grumman and NWIRP sites was the likely source of the VOC contamination of the LWD Wills. Merklin Decl., ¶ 17. Thereafter, D&B requested information from NYSDEC regarding the OU-2 plume in

order to design proper treatment for the LWD Wells. Id. The NYSDEC provided data and reports to D&B in response to its request regarding the OU-2 plume, covering the period from 2010 through 2013. Id. at ¶ 18. The data and reports obtained by D&B evidenced that the contaminants detected in the LWD Wells were the same contaminants which were known to be emanating from and associated with the OU-2 plume and which had also been discovered in monitoring wells throughout the area of the growing OU-2 plume migrating off-site and extending into the deep Magothy Aquifer (which is source of the water supply for the LWD Wells), including to the depths of the screen zones of the LWD Wells. Id. at ¶¶ 11, 18, 20. In designing the appropriate wellhead treatment for LWD Wells, D&B reviewed the groundwater monitoring data for all the monitoring wells contained in the various reports, noting the data for the OU-2 monitoring wells in closest proximity to the LWD Wells as well as those monitoring wells with the highest VOC concentrations, including GM-34D and GM-34D2, located approximately one (1) mile north and northeast of the LWD Wells, and GM-38D and GM-38D2, located to the east of the GM-34 monitoring wells. Id. at ¶¶ 18-27; Merklin Expert Report, p. 4 and Exhibits C and D thereto at Section 2.0.

For the period from February 2010 through June 2013, the data reports obtained by D&B indicated detections of VOCs in monitoring wells GM-34D, GM-34D2, GM-38D and GM-38D2 ranging from 27 ppb to 870 ppb for TCE; .38 ppb to 12 ppb for Freon-113; 4.8 ppb to 16 ppb for PCE; and .34 ppb to 6 ppb for 1,1-DCA. Id. In annual groundwater monitoring reports for the years 2010 and 2012, "Well GM-33D2 located along the southwestern boundary of the Northrop Grumman site, exhibited three VOCs (i.e., Freon 113, TCE, and PCE, see Table 7) that exceeded SCGs in this period, with similar exceedances occurring the first three quarters of Year 2010" and

in the "First, Second and Third Quarters of 2012" with "Well GM-34D2 continues to exhibit an increasing level in TVOC concentrations." Merklin Decl., ¶¶ 25-26.

In December 2012, outpost monitoring well BPOW 4-2 (also known as OW 4-2), installed as part of the Public Water Supply Contingency Plan ("PWSCP") included in the Records of Decision for the OU-2 plume for the Northrop Grumman site (the "OU-2 ROD") and for the NWIRP site (the "Navy ROD"), to provide early warning of the arrival of the OU-2 plume to LWD Well 13, had detections of Freon-113 at 1.5 ppb and TCE estimated at .25 ppb. Id. at ¶ 26. In May 2013, outpost monitoring well BPOW 4-1 (also known as OW 4-1), installed to provide early warning of the arrival of the OU-2 plume to LWD Well 13, had detections of Freon-113 estimated at 3.8 ppb while well BPOW 4-2 had detections of Freon-113 estimated at 1.5 ppb and TCE estimated at .30 ppb, suggesting that TCE from the OU-2 plume was potentially advancing toward the LWD Wells. Id. at ¶ 27.

The OU-2 groundwater monitoring data and reports obtained by D&B corroborated the determination that the commingled OU-2 plume was the likely source of contamination of the LWD Wells and assisted Mr. Merklin and his team at D&B in determining the design parameters for the wellhead treatment systems to remove the VOCs from the LWD Wells, including determining the maximum influent concentrations in order to design the wellhead treatment for the removal of VOC contamination from the LWD Wells. Id. at ¶¶ 18, 31.

Northrop Grumman contends that Mr. Merklin is unqualified to offer an opinion on the source of the VOC contamination impacting the LWD Wells because his "expertise in constructing water supply projects is unrelated to issues relevant to the source of substances present in wells.". NG MOL Merklin Excl. Mot., p. 7. Northrop Grumman's reliance on In Re M/V MSC Flamina, No. 12-CV-8892, 2017 WL 3208598, at *11 (S.D.N.Y. Jul. 28, 2017) is misplaced. In that case,

the court found that an individual on one field may not offer opinions in another. That is not the situation with respect to Mr. Merklin. Similarly, Defendants' reliance on Town of New Winsor v. Tesa Tuck, Inc., 935 F. Supp. 300 (S.D.N.Y. 1996), Thomas v. FAG Bearing Corp., 846 F. Supp. 1382, 1394 (W.D. Mo. 1994), reconsidered in part, 860 F. Supp. 663 (W.D. Mo. 1994), and Innis Arden Golf Club v. Pitney Bowes, Inc., 629 F. Supp. 2d 175, 190 (D. Conn. 2009) is also misplaced. Unlike those cases, the testimony of the Town's experts in this case is supported by sufficient, reliable facts and data, as set forth at length herein. Moreover, the Covestro Defendants acknowledge that the opinions of their purported expert witness were "based upon a review of documentation and data included in reports prepared by other environmental consultants and regulatory agencies regarding the environmental investigation and remediation activities completed at the RUCO/Hooker Site." Statement of Undisputed Material Facts of Covestro Defendants, ¶ 49. Under Defendants' theory, the testimony of Covestro's expert would also be subject to exclusion.

Part of the process for designing water supply treatment facilities to address contamination in public water supply wells for drinking water is to establish parameters, including the maximum influent concentration, so that the wellhead treatment can effectively treat the impacted water supply wells in the worst-case scenario as concentration levels of the VOCs potentially change over the course of time. Merklin Decl., ¶ 36. Therefore, it was entirely permissible for Mr. Merklin to "extrapolate from existing data" provided by NYSDEC, the EDR Report, and the SWAP reports in order to determine the appropriate design parameters for the wellhead treatment systems for the LWD Wells. Cedar Petrochemicals, Inc., 769 F. Supp. 2d at 284. To the extent that that data also indicated the likely source of the VOC contamination impacting the LWD Wells, it was based on reliable results from groundwater monitoring and other tests conducted by independent consultants

which allows Mr. Merklin to offer his opinion. If Defendants question whether there is sufficient factual basis for Mr. Merklin's opinion, that argument goes to the weight, not the admissibility of Mr. Merklin's testimony. Id. at 285.

Similarly, Northrop Grumman's reliance on DVL, Inc. v. General Electric Co., 811 F. Supp. 2d 579, 597 (N.D.N.Y. 2010), is also unpersuasive. In DVL, Inc., the plaintiff was unable to demonstrate any evidence linking the defendants' activities to the plaintiff's site, principally relying on the location of defendants' property adjacent to plaintiff's property. Here, on the other hand, the foregoing demonstrates that Mr. Merklin relied on sufficient data, a significant amount of which was groundwater monitoring reports prepared by or on behalf of Northrop Grumman and the Navy, to reach his conclusions concerning the source of the VOC contamination impacting the LWD Wells.

Furthermore, Defendants' contention that Mr. Merklin's testimony is unreliable because he did not exclude "other possible sources of Freon-113" located north and west which could be the source of the VOC contamination of the LWD Wells, is unsubstantiated and belied by their own experts. NG MOL Merklin Excl. Mot., p. 9. Furthermore, even if "other possible sources of Freon-113" existed, that would go to the weight, not the admissibility, of Mr. Merklin's testimony. In particular, the report of Northrop Grumman's purported expert hydrogeologist, Nathan A. Epler, Ph.D. (the "Epler Report"), confirms that the data available concerning Freon-113 detections in Hicksville Water District supply wells 8-1, 8-3, 9-1, 9-2, and 9-3 (the "HWD Supply Wells"), located adjacent to the northwest portion of the Northrop Grumman and Hooker/Ruco sites, indicates that Freon-113 was only first detected in some of the HWD Supply Wells in 2018, long after Freon-113 was first detected in the LWD Wells. Exhibit "72", Epler Report, Table 4-8; Humann Decl., ¶ 66. In addition, LWD Wells 5A and 6B are the only supply wells in close

proximity to the LWD Wells and according to the Epler Report, LWD Wells 5A and 6B have no detections for Freon-113. Exhibit "72", Epler Report, p. 18 and Figure 1. The data provided by Dr. Epler corroborates that the VOC contamination impacting the LWD Wells is not coming from the northwest.

Furthermore, the data provided by Northrop Grumman to the NYSEC in or about July 2019, in response to the Proposed Amended Record of Decision ("PAROD") for OU-2 – Groundwater at the Northrop Grumman and NWIRP sites, refutes Northrop Grumman's contention that some unidentified source north and west of the Northrop Grumman, NWIRP, and Hooker/Ruco sites is the source of VOC contamination impacting the LWD Wells. Exhibit "70", Northrop Grumman's Response to PAROD, Figures D-1 and D-8.

Moreover, the report of Northrop Grumman's purported expert on National Contingency Plan ("NCP") compliance, Kurt Herman from Gradient (the "Herman Report"), does not identify any site listed as "spills and potential sources" as having any detections of Freon-113 and the Northrop Grumman, NWIRP, and Hooker/Ruco sites are all within the center of the noted "spills and potential sources" identified in Figure 9 of the Herman Report. Exhibit "103", Herman Report, Figure 9. With respect to the New Cassel Industrial Area ("NCIA") site located to the west of the Northrop Grumman, NWIRP, and Hooker/Ruco sites on Figure 9 of the Herman Report, Gradient itself concluded that the groundwater flow direction of the OU-1 groundwater contamination plume associated with NCIA is toward the southwest (i.e., in the opposite direction from where the LWD Wells are located). Exhibit "104", Gradient Comments On Proposed Plan for Operable Unit 1 of the New Cassel/Hicksville Groundwater Contamination Superfund Site, September 23, 2013, pp. 7-8.

Similarly, the report of the Federal Defendants' purported expert hydrogeologist, Charles McLane III, Ph.D. (the "McLane Report"), fails to identify any of the locations identified as "likely and potential Freon-113 usage" on Figure 12 of his report. Exhibit "66", McLane Report, Figure 12. Dr. McLane fails to indicate whether any of the locations identified on Figure 12 of his report had detections of Freon-113 and, if so, the concentration levels of any Freon-113 detected. Id. In addition, the "one documented Freon-113 release" which Dr. McLane was able to locate occurred in October 1985 at Servo Corporation, located north of the Northrop Grumman and NWIRP sites; involved a spill of 10 to 15 gallons of 900V Solvent which contained 25% Trichlorotrifluroethane/Freon-113 by weight (equaling approximately 2.5 to 3.75 gallons of Freon-113); the spill was cleaned-up; and the clean-up was supervised by NCDOH, assisted by NYSDEC and the Fire Marshall. Exhibit "66", McLane Report, p. 16; Exhibit "109", Final Draft Site Inspection Report, Servo Corporation, Vol. 1, June 28, 1991 at Potential Hazardous Waste Site Preliminary Assessment. Moreover, the attributable contaminants to the Servo Corporation site did not include Freon-113. Id. at Part IV: Hazard Assessment, No. 1.

The Fourth Quarter 2020 monitoring well data which the Navy submitted to NYSDEC in connection with the OU-2 plume further refutes and undermines Defendants' contention of "other possible sources of Freon-113" located north and west of the Northrop Grumman, NWIRP, and Hooker/Ruco sites. In particular, monitoring wells MW-179D, D1, and D2, located to the near west of the Northrop Grumman site adjacent between the HWD Supply Wells and the LWD Wells, reveal no detections of Freon-113. Humann Decl., ¶ 71; Exhibit "73", Fourth Quarter 2020 Groundwater Sampling Results, p. 2 and Figure Number 2. That corroborates that "other sources north and west" of the Northrop Grumman, NWIRP and Hooker/Ruco sites are not the likely source of the contamination impacting the LWD Wells.

Even if any of the Defendants' contentions about other possible Freon-113 sources located north and west of the Northrop Grumman, NWIRP, and Hooker/Ruco sites had a scintilla of proof, it is clear that, "[i]t is not required. . .that an expert categorically exclude each and every possible alternative cause in order to render the proffered testimony admissible." Cedar Petrochemicals, Inc., 769 F. Supp. 2d at 287 (internal quotation omitted).

Northrop Grumman also contends that Mr. Merklin should be precluded from offering testimony that the wellhead treatment systems for the LWD Wells were designed and built consistent with the NCP. NG MOL Merklin Excl. Mot., p. 10. It is respectfully submitted that Northrop Grumman and the remaining defendants misconstrue the issue of whether the Town incurred response costs consistent with the NCP.

The design, construction, maintenance and operation of the PTAS treatment systems to remove the VOC contamination impacting the LWD Wells to ensure that the Town provides drinking water to its residents in compliance with the applicable drinking water quality standards was undertaken in substantial compliance with the applicable regulations and requirements governing the LWD as a public water district, including applicable processes established to protect the public water supply wells from the commingled OU-2 plume emanating from the Northrop Grumman and NWIRP sites. That compliance occurred as a matter of course in the performance of the Town's responsibilities as a public water supplier and consistent with the relevant processes established to protect public water supply wells from the OU-2 plume, including the PWSCP. For purposes of judicial economy, the Court is respectfully referred to Section IV of the Town's Memorandum of Law in Opposition to Northrop Grumman's Motion for Summary Judgment (the "Opp. MOL to NG MSJ") for the background and legal bases as to how the Town incurred response costs consistent with the NCP, all of which provide sufficient data and support for Mr.

Merklin to offer testimony on. See Town of Halfmoon v. GE, No. 1:09-CV-228 (Lead), 1:11-CV-6 (Member), 2016 U.S. Dist. LEXIS 26888 ** 17-18 (N.D.N.Y. March 3, 2016) (regarding GE's objections to the expert testimony of plaintiff's expert on the issue of NCP compliance, the court found that the expert's "usage of inconsistent language nor any of the other shortcomings identified by GE warrant exclusion as this juncture. Rather, GE is 'free to challenge any 'shaky or unreliable' testimony before the jury using the 'traditional devices of vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof.'") (internal quotation omitted).

C. Mr. Merklin's Testimony Regarding The Design Of The Wellhead Treatment Systems For The LWD Wells Is Admissible

Defendants take issue with the design parameters of the PTAS wellhead treatment systems for removing the VOC contamination from the LWD Wells chosen by Mr. Merklin. NG MOL Merklin Excl. Mot., pp. 11-14. In particular, Northrop Grumman contends that "Mr. Merklin fails to provide a reliable justification for his use of a 420 ug/l of TCE design criteria." Id. at p. 12. However, "contentions that assumptions are unfounded go to the weight, not the admissibility of the testimony." Cedar Petrochemicals, Inc., 769 F. Supp. 2d at 423 (internal quotation omitted).

In support of their contention, Northrop Grumman relies on Donnelly v. Ford Motor Co., 80 F. Supp. 2d 45, 49-50 (E.D.N.Y. 1999). However, that reliance is misplaced. In Donnelly, the court found the expert's opinion inadmissible where the expert failed to "identify any specific technique or method that he used, and cite[d] no industry standards, surveys or studies upon which he relied." Id. at 50. The expert opined "that any fire in a Ford vehicle, in which arson has been eliminated as the cause, that has its origin under the drive side dash and in the area of the steering column can be directly linked to the vehicle ignition switch and system." Id. at 49. The court found that the expert's testimony was inadmissible ispe dixit. Id. at 50. No such unsupported

pronouncements exist in this case. In addition, in Cedar Petrochemicals, Inc., while noting that a court need not admit opinion evidence that is connected to existing data only by the ipse dixit of the expert, stated the language in Daubert that vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attaching shaky but admissible evidence. 769 F. Supp. 2d at 286.

Here, Mr. Merklin designed the wellhead treatment systems for the LWD Wells based on his education, training, and 30-years' experience in designing water supply treatment systems for removing contaminants from drinking water supply wells. Merklin Expert Report, pp. 1-6 and Exhibits C and D thereto. In 2013, PTAS and GAC were the most common wellhead treatment systems for removal of VOC contaminants from water supply wells. Merklin Decl., ¶ 12. Northrop Grumman agrees that, "Packed Tower Aeration Systems ("PTAS") and Granular Activated Carbon ("GAC") treatment systems are two commonly-used treatment systems that reduce the presence of contaminants in water." Northrop Grumman Rule 56.1 Statement of Material Facts, ¶ 98. In fact, Northrop Grumman and the Navy utilize PTAS treatment systems as part of their remediation of the on-site and off-site VOC contamination associated with the Northrop Grumman and NWIRP sites. Merklin Decl., ¶ 43.

Due to the concentrations of Freon-113 nearing the MCL of 5.0 ug/l for that compound in LWD Wells 8A and 13, as well as the increasing concentrations of VOCs in LWD Well 7A, D&B deemed it necessary to design and construct treatment facilities for the removal of VOCs from the water source at the LWD Wells. Merklin Decl., ¶ 33. Based on his analysis of the source of the contamination, the potential maximum influent concentrations, and the VOC contamination affecting the LWD Wells, Mr. Merklin concluded that PTAS would effectively and efficiently

treat the VOCs detected in the LWD Wells. Id. at ¶ 36. Specifically, Mr. Merklin based his conclusion on his

> extensive experience with water supply engineering and designing many wellhead treatment systems for removal of VOC contamination from public supply wells; the nature of the VOC contamination impacting the LWD Wells; the concentration levels of the same VOCs detected in groundwater monitoring wells in the OU-2 plume deemed to be the likely source of the VOC contamination in the LWD Wells; the trigger value for Freon-113 being reached in the OU-2 outpost monitoring wells BPOW 4-1 and 4-2 installed specifically to provide early warning of the impact of the OU-2 plume to LWD Well 13; and understanding that wellhead treatment is designed to continue to effectively treat the impacted water supply wells in the worst case scenario as concentration levels of the VOCs potentially change over the course of time.

Id.

The Design Reports prepared by D&B for the PTAS wellhead treatment systems for the LWD Wells set forth the data and information which D&B relied on in designing the PTAS systems. Merklin Expert Report at Exhibits C and D, Sections 3.0 and 4.0. PTAS (also known as air stripping technology) is an aeration process which encourages the transfer of VOCs found in groundwater from the aqueous phase to the gas phase. Merklin Decl., ¶ 37. Water is distributed over the top of the unit while air is forced upward through the bottom and loosely fitted packing material serves to increase the air/water interface area to provide maximum mass transfer. Id. During the air stripping process, the contaminants are transferred from the water to the air so that the water coming out is no longer contaminated. Id. Since air-stripping removes the contaminants from the water and concentrates them in the off-gas, the off-gas may require treatment by other means, such as GAC adsorption. Id.

Based on their review of the groundwater monitoring data and reports regarding the OU-2 plume, Mr. Merklin and his team were concerned that the LWD Wells would continue to exhibit an increasing trend in VOCs potentially exceeding the MCL. Id. at ¶ 38. In conjunction with the

fact that many monitoring wells in the OU-2 plume had high detections of TCE in excess of 400 parts per billion ("ppb"), including the monitoring wells closest in proximity to the LWD Wells, Mr. Merklin and his team determined that if the OU-2 plume continued to migrate off-site as expected, that the TCE could potentially impact the LWD Wells, as evidenced by the low level TCE concentrations being detected in outpost monitoring well BPOW 4-2. Id. Based on his extensive experience and understanding of water supply engineering practice, Mr. Merklin knew that a water treatment facility should be designed to treat the highest possible future contamination concentration anticipated so that it will be effective for as long as necessary. Id. As a result, D&B determined the potential maximum influent concentrations for the PTAS treatment facility for LWD Wells 7A/8A to be TCE (at 420 ppb), Freon-113 (at 8.6 ppb), PCE (at 12 ppb), and 1,1-DCA (at 5.8 ppb) and for LWD Well 13 to be TCE (at 420 ppb) and Freon-113 (at 8.6 ppb). Id. at ¶ 39; Merklin Expert Report, Exhibit C at p. 3-3 and Exhibit D at p. 3-3. Mr. Merklin and his team also determined that the LWD Wells would also eventually need to treat the off-gas emitted from the PTAS and that the best option to achieve that would be vapor phase activated carbon to adsorb and remove the VOCs from the off-gas emissions. Id. at ⁋ 40; Merklin Expert Report, Exhibit C at p. 3-5 and Exhibit D at p. 3-5.

Mr. Merklin and his team also considered other alternatives to PTAS treatment, including the installation of a GAC adsorption treatment plan (where the VOCs would be absorbed onto the carbon media in a filter vessel) and the drilling of a new well elsewhere in the LWD. Id. at ⁋ 41. However, Mr. Merklin and his team determined that a GAC adsorption treatment plan was not a viable option for treatment because Freon-113 and 1,1-DCA cannot be readily treated by GAC adsorption, but could be readily treated by PTAS. Id. at ¶¶ 41, 43. Mr. Merklin and his team also determined that installing a new well at a different site within the LWD was not a viable option

since any new wells would require the LWD to purchase additional property on which to site the wells and would amount to a larger capital cost than the proposed PTAS systems. Id. at ¶ 42.

In determining the design parameters for the maximum influent concentration levels for the treatment systems, Mr. Merklin relied on the data and reports – prepared by or on behalf of Northrop Grumman and the Navy - evidencing the existing concentration levels of the VOC contaminants in the OU-2 plume in the surrounding area, many evidencing TCE concentrations exceeding 400 ppb. In light of the continuing migration of the OU-2 plume, in conjunction with the increasing VOC concentration levels in the LWD Wells and outpost monitoring well BPOW 4-2 (installed to provide early warning of the arrival of the OU-2 plume to LWD Well 13) showing concentration levels of TCE, Mr. Merklin relied on the existing data showing that TCE could potentially impact the LWD Wells to design a water treatment system to treat the highest possible future contamination concentration anticipated so that it would be effective for as long as necessary.

With respect to the issue of the design parameters for the PTAS treatment systems, Defendants take issue with the decision to construct the PTS treatment system for LWD Wells 7A/8A with two packed towers in series rather than one packed tower. NG MOL Merklin Excl. Mot., pp. 14-15. In particular, Defendants contend that the issue of aesthetics in constructing two packed towers for LWD Wells 7A/8A for achieving the Town's goal of mitigating the negative visual impact of the treatment systems on the surrounding residential community is a basis to exclude Mr. Merklin's expert testimony. Id. As with the rest of their arguments, if Defendants have issues with the scope of the PTAS treatment systems for the LWD Wells, their recourse is cross-examination and the presentation of contrary evidence at trial, it is not the exclusion of Mr. Merklin's expert testimony.

For purposes of judicial economy, the Court is respectfully referred to Section III(B) of the Town's Opp. MOL to NG MSJ for a detailed discussion of the factual and legal bases supporting the Town's decision to construct the PTAS treatment system for LWD Wells 7A/8A with two towers in series enclosed in a building and for LWD Well 13 with one tower not enclosed. The bases cited by the Town relating to the issue of aesthetics have been approved by Northrop Grumman. Id. and Exhibit "101", Northrop Grumman's Response to PAROD, Attachment 3, Community Impact Analysis, July 5, 2019, pp. 10-12, 25-27; Exhibit "75", Groundwater Feasibility Study, OU-2, pp. 3-11 to 3-12 (NYSDEC 00000865-66).

Mr. Merklin is sufficiently qualified to testify as to why he chose the design criteria, why that design criteria was appropriate in this case, the process and costs incurred in constructing the PTAS treatment systems, and the approvals for those systems obtained by the applicable regulatory agencies, and his expert testimony, based on sufficient data, is reliable and admissible. If Defendants question any of the assumptions or facts relied on by Mr. Merklin, they can cross-examine him and attempt to present contrary evidence at trial. As such, it is respectfully submitted that the Exclusion Motions relating to Mr. Merklin should be denied with prejudice in their entirety.

II. THE EXPERT TESTIMONY OF RICHARD W. HUMANN, P.E. SHOULD NOT BE EXCLUDED

The Town has designated Richard W. Humann, P.E. as an expert witness in this matter on the impact of the groundwater contamination emanating from the Northrop Grumman and NWIRP sites (commingled with the groundwater contamination emanating from the Hooker/Ruco site) on the LWD Wells owned and operated by the Town. Mr. Humann and his colleague, Timothy J. Hazlett, Ph.D., from H2M architects + engineers ("H2M"), co-authored an expert report, dated August 6, 2019 (the "H2M Expert Report"), in which they opine with a high degree of certainty

that the LWD Wells have been contaminated by Freon-113 originating at that the Northrop Grumman, NWIRP, and Hooker/Ruco sites. Exhibit "7", H2M Expert Report, pp. 1-9 and Figures 1-3. Their respective opinions are based on the hydrogeologic assessment and water quality analyses conducted by H2M, as well as their extensive understanding and experience with the overall remediation of the Northrop Grumman and NWIRP sites. Id. at p. 8. Northrop Grumman, joined by the remaining defendants, seeks to exclude the expert testimony of both Mr. Humann and Dr. Hazlett. As it relates to Mr. Humann, the Defendants contend that Mr. Humann's expert testimony is unreliable because: i) they believe that Mr. Humann's opinion is solely premised on the inclusion of Freon-113 as a contaminant of concern in the OU-2 ROD; ii) that Mr. Humann's opinion concerning a distinct Freon-113 is unsupported speculation; and iii) that Mr. Humann's opinion that TCE cannot be a marker of the OU-2 plume for the source of Freon-113 in the LWD Wells is unreliable. Northrop Grumman Memorandum of Law in Support of Motion to Exclude the Expert Testimony of Richard Humann (the "NG MOL Humann Excl. Mot."), pp. 6-11. Defendants are wrong in all respects.

A. Mr. Humann is Qualified to Be an Expert in this Action

As like Mr. Merklin, Mr. Humann is also sufficiently qualified to be an expert in this case and offer expert testimony on behalf of the Town, his expert opinions are reliable, and his expert opinions will assist the trier of fact in this matter. H2M is a multidiscipline engineering and architectural firm that specializes in various practice areas including water resource engineering, wastewater engineering, environmental engineering, civil, mechanical and electrical engineer, and architecture. Id. at ¶ 1.

Mr. Humann, the President and Chief Executive Officer of H2M since 2013, is a Professional Engineer licensed in New York, New Jersey, Connecticut, Virginia, Pennsylvania,

Delaware, Michigan, Florida, Maryland, Washington D.C., and Massachusetts, with over 30 years of experience. Humann Decl., ¶ 1. During his tenure at H2M since 1987, Mr. Humann has worked as Project Engineer, Project Manager, Project Director and Chief Water Resources Engineer. Id. Mr. Humann attained his Bachelor of Science degree in Mechanical Engineering in 1991 from New York Institute of Technology. Id. Additionally, Mr. Humann has been the New York Section Program Committee Chair for the American Water Works Association and has been on the Drinking Water Standards and Comprehensive Planning Committees and Program Committee Chair for the Long Island Water Conference. Id. at ⁋ 7.

Among his responsibilities, Mr. Humann is responsible for managing several of H2M's water supply clients. Id. at ¶ 4. In that capacity, he evaluates and designs water supply facilities and treatment systems and works with water districts addressing groundwater contamination. Id. Mr. Humann has extensive experience in hydrogeology, groundwater and aquifer assessments, plume and groundwater contamination evaluations, water quality and regulatory requirements. Id. He has been responsible for the design and construction of groundwater treatment systems for over seventy-five (75) public supply wells for approximately fifteen (15) to twenty (20) different public water suppliers. Id.

Mr. Humann has conducted overall review and assessment of groundwater contamination plumes emanating from past and present industrial, manufacturing, dry cleaning, automotive, and other similar facilities. Id. at ⁋ 5. He has reviewed and evaluated investigation reports, data and analyses, made assessments of threats to public water supply facilities, reviewed hydrogeologic assessments and models, and communicated and corresponded with regulatory officials, and has managed groundwater well capture zone analyses and evaluated groundwater contamination plumes impacting public supply wells. Id.

As it relates to this case, based on his experience in the impact and potential impact of site-related groundwater contamination to public supply wells, together with his involvement with the OU-2 plume over the last 30 years, Mr. Humann's focus in this matter was evaluating and assessing whether the VOC contamination which has impacted the LWD Wells originated from the Northrop Grumman site and NWIRP site (which has also commingled with contamination which migrated off of the Hooker/Ruco site. Id. at ¶ 2.

For over 40 years, H2M has been involved in a position of technical oversight regarding the overall groundwater contamination at the Northrop Grumman and NWIRP sites and the resulting impacts to public drinking water supply wells as a result of the migration of site-related contaminants into off-site groundwater. Id. at ¶ 13. Mr. Humann personally has been involved for the last 30 years in reviewing, assessing and evaluating data, investigations, studies and reports conducted by Northrop Grumman and the Navy, with specific expertise in the impact and potential impact of the site-related groundwater contamination to public supply wells. Id. That experience has included as a consulting engineer to the Bethpage Water District ("BWD") with the first treatment system installed at the BWD Plant Number 6 which was impacted from VOC contamination from the OU2 plume and he was also involved in the wellhead treatment for BWD Plant Number 5 to treat VOC contamination from the OU2 plume, which was designed with a PTAS treatment system with two towers enclosed in a building. Id. at ¶ 14.

Of significance to this case, in 2011, Mr. Humann was appointed by the Navy to the Technical Team for Optimization of the Bethpage Plume Remedy ("Technical Team") to review, analyze and report on the effectiveness of the ongoing remedy for the OU-2 plume. Id. at ¶ 15. Mr. Humann was one of seven members appointed to the Technical Team, which prepared a Remedy Optimization Team Report for the Bethpage Groundwater Plume Remedy, dated June 15,

2011 (the "Remedy Optimization Report"). Id.; Exhibit "44", Remedy Optimization Report. The Remedy Optimization Report, which was submitted to the NYSDEC, noted that "[i]n order to evaluate the effectiveness of the ongoing remedy for the Bethpage plume and recommend potential future steps for optimizing the remedy, the Navy requested an optimization review of the Bethpage plume remedy by a team of independent nationally-recognized experts in chlorinated solvent impacts to groundwater." Id; Exhibit "44" at Executive Summary, p. iii (NYSDEC000009472). The "goal of this [Technical] team is to provide an independent evaluation of the groundwater remedy at the Bethpage site and recommend potential steps to optimize the remedy's implementation." Id. at ¶ 16.

The Navy appointed Mr. Humann to the Technical Team as one of the "nationally-recognized experts in chlorinated solvent impacts to groundwater" based on his credentials and extensive experience dealing with groundwater and the aquifer system on Long Island in relation to the impact of VOC contamination to public supply wells. Id. at ¶ 17. The Technical Team was required to review "key documents including, but not limited to, the Record of Decision (ROD) for OU-2, the Remedial Investigation and draft Feasibility Study for OU-3, Quarterly and Annual Monitoring Reports, documents relating to the On-Site Containment System and hot spot treatment at well GM-38, correspondence regarding the USGS/U.S. EPA task to review Northrop Grumman Corporation's computerized groundwater model, and the USGS report on its findings from the model review." Id.; Exhibit "44" at p. 2 (NYSDEC000009479). The Technical Team held weekly conference calls, conducted site visits to the Northrop Grumman and NWIRP sites and several of the water district supply wells and associated wellhead treatment systems, and conducted several meetings to develop conclusions, discuss recommendation, and issue its optimization report. Id.

The Technical Team "noted that this large and deep plume in a highly complex geologic setting has posed and will continue to pose relatively unique challenges for decision makers" and that "[a]lthough the 'Bethpage Plume' is often referred to as a single plume, there are multiple plumes and/or plume fingers due in part to the permeability contrasts resulting from heterogeneous geology involved" and that "[]instead of a single, contiguous plume, there are multiple widely dispersed plumes or fingers." Id. at ¶ 18; Exhibit "44" at p. 3 (NYSDEC000009480).

Additionally, the Technical Team determined that "[v]ariable hydrologic stresses, including changes in pumping rates of the supply wells over time, exert considerable influence on groundwater flow and plume migration and add complexity to the site. Therefore, estimating the velocity and strength of groundwater flow and plume migration will continue to be a challenge at the Bethpage site." Id. at ¶ 19; Exhibit "4" at p. 5 (NYSDEC000009482). In addition, the Technical Team found that the "plume currently is not well defined along its eastern and western boundaries, especially down-gradient of the On-Site Containment System." Id. Further, the Technical Team also noted that "[c]ontribution to the OU-2 Plume from the Hooker/RUCO Superfund site also is not well defined" and that the "further away from the source, the more difficult plume definition becomes, as the plume fingers become more isolated and dispersed." Id. at ¶ 20; Exhibit "44" at p. 14 (NYSDEC000009491).

Mr. Humann's involvement as part of the Technical Team reinforced his familiarity and experience with addressing the myriad of issues associated with the impact and potential impact of the OU2 plume to public water supply wells. Id. at ¶ 21. Based on his knowledge and experience, Mr. Humann possesses a full understanding of the monitoring well ("MW") and vertical profile boring ("VPB") network associated with the OU-2 plume, as well as the methodologies, approaches and shortcomings utilized by Northrop Grumman and the Navy over

the years in the attempt to properly and adequately delineate, control and remediate the site-related plume of groundwater contamination. Id. Mr. Humann and his team at H2M have: i) independently reviewed the publicly available data and reports associated with the contamination emanating from the Northrop Grumman and NWIRP sites (which has commingled with the contamination which migrated from the Hooker/Ruco site); ii) assessed and evaluated the site-characterization of the OU-2 plume; iii) assessed and evaluated the likelihood of distinct and/or commingled contaminant plumes emanating from the Northrop Grumman and NWIRP sites; iv) assessed and evaluated the data as it relates to the VOC contamination impacting the LWD Wells; v) conducted a hydrogeologic assessment and evaluation of the vicinity groundwater movement and capture zone of the LWD Wells; and vi) evaluated the characteristics and mobility of Freon-113 and TCE to determine whether the site-related VOCs have impacted or threatened to impact the LWD Wells. Id. All of that knowledge, training, and practical experience makes Mr. Humann uniquely and unequivocally qualified to testify in this case regarding the impact of the commingled groundwater contamination emanating from the Northrop Grumman, NWIRP, and Hooker/Ruco sites on the LWD Wells. Cedar Petrochemicals, Inc., 769 F. Supp. 2d at 283.

B. Mr. Humann's Opinions are Based Upon Reliable Facts and Data

Northrop Grumman contends that Mr. Humann's testimony is unreliable because it incorrectly believes that Mr. Humann's opinion is "that because Freon-113 is a COC in the OU-2 ROD, the Freon-113 in the LWD Wells must have come from the OU2 Plume." NG MOL Humann Excl. Mot., p. 7. Northrop Grumman's mischaracterization of Mr. Humann's opinion does not render it unreliable. Nor does Northrop Grumman's unsubstantiated assertion that other possible sources of Freon-113 exist north and west of the Northrop Grumman, NWIRP, and

Hooker/Ruco sites justify the exclusion of Mr. Humann's testimony. Id. at p. 6.[6] Northrop Grumman also contends that Mr. Humann's opinion that there is a distinct Freon-113 plume emanating from the Northrop Grumman and NWIRP sites is unsupported speculation and that Mr. Humann's opinion that TCE is not a marker of the OU-2 plume is unreliable. Id. at pp. 8-11. Neither of those assertions is valid nor do they warrant the exclusion of Mr. Humann's expert testimony. The record in this case substantiates that the opinions rendered by H2M that the LWD Wells were impacted by VOC contamination emanating from the commingled OU-2 plume from the Northrop Grumman, NWIRP, and Hooker/Ruco sites are reliable and admissible.

Northrop Grumman's assertion that neither Mr. Humann nor Dr. Hazlett performed an analysis to evaluate the origin of the Freon-113 in the LWD Wells, thereby rendering their testimony unreliable (Id. at pp. 6-8), is baseless and belied by the relevant case law. See Gussack Realty Co., 224 F.3d at 94 (Xerox's primary argument is that plaintiffs' experts failed to conduct their own tests and relied only on data provided by Xerox's own experts and the DEC. However, an expert may rely on data that she did not personally collect."); Lidle, 2010 Dist. LEXIS 67031, at *17-18 ("Finally, the Court finds that Hughe's failure to test his theory is not fatal."). In fact, the Second Circuit has stated that an "expert need not have conducted her own tests" in order for the expert testimony to be admissible. Gussack Realty Co., 224 F.3d at 95. Similarly, in the context of alternative explanations for the presence of contaminants, the Second Circuit in Gussack Realty Co. held that, "Plaintiffs' experts here were not trying to account for the otherwise inexplicable presence of contamination on plaintiffs' property. Instead, they provided theories describing how, in the abstract, it would be possible for contamination to flow from the Xerox site to the Gussack

[6] For purposes of judicial economy, the Court is respectfully referred to Point I(B) herein for a detailed discussion refuting and undermining Defendants' unsubstantiated assertion concerning unknown and unidentified other possible sources of Freon-113 allegedly from the north and west.

property." Gussack Realty Co., 224 F.3d at 95. Thus, any claims by Northrop Grumman that Mr. Humann's expert testimony is inadmissible because Mr. Humann failed to conduct his own tests or disagreed that other sources of Freon-113 from the north and west was a valid assertion, fails as a matter of law.

Further, Northrop Grumman's assertions are simply belied by the documentary evidence. As set forth in the H2M Expert Report,

> H2M has independently reviewed the publicly available data and reports associated with the NG and NWIRP contamination, assessed and evaluated any site-characterization of the NG and NWIRP contamination, assessed and evaluated the likelihood of distinct and/or commingled contaminant plumed (Freon-113 v TCE) emanating from the NG/NWIRP site, assessed and evaluated the data as it relates to the LWD public supply wells contamination, conducted a hydrogeologic assessment and evaluation of the vicinity groundwater movement and capture zone of the public supply wells, and evaluated the characteristics and mobility of Freon-113 and TCE to determine with a degree of certainty whether or not the site related COCs have impacted or threatened to impact the LWD Wells 7A, 8A and 13.

Exhibit "7", H2M Expert Report, p. 2.

The data and reports assessed and evaluated by Mr. Humann substantiated that the VOCs detected in the LWD Wells, particularly Freon-113, were used and discharged extensively throughout the Northrop Grumman and NWIRP sites over extended periods of time. The Fed. R. Civ. P. 30(b)(6) designees for Northrop Grumman (Edward Hannon) and for the Navy (Lora Fly) both confirmed at their depositions in this case that Freon-113 was utilized at the Northrop Grumman and NWIRP sites in several locations. Mr. Hannon testified that different manufacturing processes used Freon-113 as a degreaser cleaning agent at various locations across the Northrop Grumman and NWIRP sites. Exhibit "50", Hannon Dep. at 57:12-58:4, 58:12-22, 69:15-70:7. Ms. Fly testified that Freon-113 was used at Plant 3 on the NWIRP site and that in the late 1970's, early 1980's groundwater sampling conducted by NCDOH detected Freon-113 in

the on-site production wells on the Northrop Grumman and NWIRP sites. Exhibit "51", Fly Dep. at 47:16-48:2, 48:8-12, 139:20-140:7.

For purposes of judicial economy, the Court is respectfully referred to: i) Plaintiff's Rule 56.1 Statement of Additional Material Facts in Opposition to Northrop Grumman's Motion for Summary Judgment ("Pl. Stmt. NG"), ¶¶ 50-63,83-92, 93-197; ii) Plaintiff's Rule 56.1 Statement of Additional Material Facts in Opposition to the Federal Defendants' Motion for Summary Judgment ("Pl. Stmt. Fed. Def."), ¶¶ 50-63, 89-98, 99-186; and iii) Plaintiff's Rule 56.1 Statement of Additional Material Facts in Opposition to the Occidental and Covestro Defendants' Motions for Summary Judgment ("Pl. Stmt. Oxy/Covestro"), ¶¶ 46-110 for a detailed history of the use, release, and discharge of VOCs, particularly Freon-113/Trichlorotrifluoroethane, on the Northrop Grumman, NWIRP and Hooker/Ruco sites.

In addition, in July 2000, Freon-113 was detected at monitoring wells installed in connection with the migration of the OU-2 plume both on the Northrop Grumman site and off-site south of the Northrop Grumman site. Pl. Stmt. NG, ¶¶ 209-212. The Second Quarter 2000 Groundwater Monitoring Report provided that, "[b]ased on the occurrence of Freon 113 in groundwater, and its use at the site, this compound will be added to the TCL [Target Compound List] of VOCs in subsequent rounds," meaning that Freon-113 was added to the list of VOCs monitored in the total VOC ("TVOC") well network associated with the OU-2 plume. Id. at ¶¶ 213-214. Furthermore, pursuant to the PWSCP, outpost monitoring wells BPOW 4-1 and 4-1 were installed upgradient of LWD Well 13 for the specific purpose of providing early warning of the arrival of the OU-2 plume to LWD Well 13. Id. at ¶¶ 269-274. Table 1 of the PWSCP specifically contains the list of VOCs associated with the Northrop Grumman and NWIRP sites, which were selected for inclusion based on: frequency of detection in valid groundwater samples, location of

detection; known source areas; and observed biotransformation processes. Id. at ¶¶ 248, 254. Freon-113, Chloroform, TCE, PCE and 1,1-DCA – all VOCs detected in some measure in the LWD Wells – are included in the list of VOCs associated with the Northrop Grumman and NWIRP sites. Id. at ¶¶ 249-253. In addition, Mr. Humann knew that the SWAP reports prepared by NYSDOH and NCDOH for the LWD Wells depict the area that contributes recharge for those wells and that the contributing area of the LWD Wells intersects the Northrop Grumman and NWIRP sites. Humann Decl., ¶ 33.

Upon assessing and evaluating the data and reports available to him, and based on his training and education and 30 years' experience with the groundwater contamination plume emanating from the Northrop Grumman and NWIRP sites, in conjunction with the data and reports he reviewed while a member of the Technical Team appointed by the Navy, Mr. Humann was able to reliably conclude that the VOC contamination impacting the LWD Wells originated at the Northrop Grumman, NWIRP, and Hooker/Ruco sites. That conclusion and the bases for that conclusion are set forth in the H2M Expert Report, pp. 1-5, 8-9 and Figures 1-3 thereto.

In particular, Mr. Humann found that with decades of chemical and hazardous storage and discharges throughout the Northrop Grumman and NWIRP sites, several VOCs, at varying quantities and locations, entered the groundwater at the Northrop Grumman and NWIRP sites and became a series of commingled groundwater plumes. H2M Expert Report, pp. 3-4; Humann Decl., ¶ 34. In addition, due to its close proximity to the Northrop Grumman and NWIRP sites, groundwater contamination emanating from the Hooker/Ruco site would have and has commingled with the OU-2 plume. Exhibit "7", H2M Expert Report, p. 3; Humann Decl., ¶ 24; Exhibit "46", Record of Decision, Hooker Chemical/Ruco Polymer Superfund Site, September 2000, pp. 2-3 (OXY-003631, 3626-27, 3637-39). Once the groundwater plume of contamination

migrated off of the Hooker/Ruco site and commingled with the groundwater plumes of contamination from the Northrop Grumman and NWIRP sites, Mr. Humann's analysis applies to the commingled OU-2 plume of which the Northrop Grumman, NWIRP, and Hooker/Ruco sites all contributed. H2M Expert Report, pp.8-9; Humann Decl., ¶ 24.

Mr. Humann further determined that the groundwater plume consisting of OU-2 cannot be viewed as a single plume but must be considered as a heterogeneous combination of a series of individual VOC plumes which originated from different locations and at different times on-site and commingled together either on-site or off-site, at varying proportions. Id. That determination is consistent with the Remedy Optimization Report which noted that there are multiple plumes and/or plume fingers due in part to the permeability contrasts of the heterogeneous geology involved and that instead of a single, contiguous plume, there are multiple widely dispersed plumes or fingers. Exhibit "44", Remedy Optimization Report, p. 3 (NYSDEC000009480); Humann Decl., ¶ 34.

As a result, Mr. Humann concluded that any evaluation approach which assumes that all contaminated groundwater originating from the Northrop Grumman and NWIRP sites is marked by TCE is invalid. H2M Expert Report, pp. 3-4; Humann Decl., ¶ 34. Mr. Humann opines that there is a distinct Freon-113 plume emanating from the Northrop Grumman and NWIRP sites along the western boundary of and commingled with the overall OU-2 plume based on the distribution of maximum Freon-113 concentrations detected in the monitoring well and vertical profile boring network, which demonstrate a Freon-113 plume commingled in non-discreet fashion originating at the Northrop Grumman and NWIRP sites within the western boundary of the overall groundwater plume. H2M Expert Report, pp. 3-5, 8-9 and Figure 1; Humann Decl., ¶ 36.

According to Mr. Humann, along the western edge of the OU-2 plume, Freon-113 has significantly higher concentrations that present a north-south plume spine, which distinguishes itself as a specific Freon-113 plume as opposed to Freon-113 that might have been released in other areas and became a contributor to the overall plume. Id. Mr. Humann determined that the data evidenced that the maximum Freon-113 concentration levels reflect the body of the Freon-113 portion of the groundwater plume emanating from the Northrop Grumman and NWIRP sites and monitoring well locations RE-106 to RE-131 to RE-124 represent a north-south spine moving directly towards LWD Well. H2M Expert Report, pp. 4-5 and Figure 1; Humann Decl., ¶¶ 63-64. The largest concentrations of Freon-113 are located on the western side of the OU-2 plume and form a north-south spine from the Northrop Grumman site to the LWD Wells. H2M Expert Report, Figure 1; Humann Decl., ¶ 65; Exhibit "70", Northrop Grumman Response to PAROD, Figure D-1. The western side of the OU-2 plume has the lowest concentrations of TCE detections. Humann Decl., ¶ 65; Exhibit "70", Northrop Grumman Response to PAROD, Figure D-8. In addition, monitoring wells RE-106D3, RE-131D2, and RE-124D1 are all located within the OU-2 plume and Northrop Grumman has acknowledged that Freon-113 detections in RE-106D3 (at 257.50 ppb), RE-131D2 (at 315.29 ppb) and RE-124D1 (at 69.16 ppb) are assumed to be sourced from the Northrop Grumman and NWIRP sites. Humann Decl., ¶ 65; Exhibit "71", Northrop Grumman Response to PAROD, Appendix E. Freon-113 contamination has migrated from the Northrop Grumman and NWIRP sites to the west that does not have TCE to the same extent that it has Freon-113. Humann Decl., ¶¶ 68-70.

Mr. Humann has also opined that an approximate 300-foot void exists in the On-Site Containment System ("ONCT") on the southern border of the Northrop Grumman site between the bottom of the deep Magothy Aquifer and the depth of the ONCT extraction wells whereby site-

related VOCs can migrate below the bottoms of the ONCT extraction wells. H2M Expert Report, p. 4; Humann Decl., ¶ 60. In addition, gaps exist horizontally between the placement of the ONCT extraction wells that contamination can easily flow and migrate off site. Id. According to Mr. Humann, if the ONCT system was fully effective, monitoring wells RE126-D2, RE122-D2, RE108-D2, and RE106-D3, which are located in what would reasonably be a downgradient "clean zone," would be free from contamination which is not the case. Id. at ¶ 62.[7]

The few cases cited by Northrop Grumman are inapposite to this case and, therefore, do not support the exclusion of Mr. Humann's testimony. In Baker v. Anshutz Exploration Corp., 68 F. Supp.3d 368, 378-79 (W.D.N.Y. 2014), the court excluded the plaintiff's expert witness testimony because the expert merely asserted that the presence of the hazardous substance at issue at plaintiff's site proved the theory that defendant's site was the source and was not based on sufficient facts and data. In Young v. Burton, 567 F. Supp. 2d 121, 131-32 (D.D.C. 2008), aff'd., 354 F. App'x 432 (D.C. Cir. 2009), a personal injury case involving exposure to mold, the court excluded the expert testimony because the opinion, that plaintiff's symptoms were evidence of mold exposure without confirming exposure and then concluding the exposure must have caused the symptoms, amounted to circular reasoning unsupported by sufficient data.

[7] Northrop Grumman erroneously represents that Mr. Humann's opinion about the voids in the ONCT was rejected by the NYSDEC. NG MOL Humann Excl. Mot., p. 9. The cited deposition testimony of Mr. Humann indicated that Mr. Humann never received a response from NYSDEC after he raised the issue with them. Notably, in January 2015, with respect to Drilling Priorities for the Navy in connection with the OU-2 plume, Drilling Priority No. 2 was to determine if VPB 156 contamination was coming from between ONCT Well 17 and 18 and Drilling Priority No. 3 was determining if bypass or underflow of ONCT was occurring with respect to VPB 157, which corroborates Mr. Humann's opinion about voids and gaps in the ONCT system allowing contamination from the Northrop Grumman and NWIRP sites to migrate off-site. Pl. Stmt. Fed. Def., ¶¶ 369-372.

Here, the opinions rendered in this case by Mr. Humann are based on the comprehensive data and reports made available to him, as well as his extensive experience and expertise with the OU-2 plume and its impact on public supply wells. Humann Decl., ¶ 72. Based on that data, Mr. Humann concludes that the groundwater contamination emanating from the Northrop Grumman, NWIRP, and Hooker/Ruco sites, which migrated off of those sites and contributed to the OU-2 plume, is responsible for the VOC contamination which has impacted the LWD Wells necessitating the implementation of wellhead treatment to remove that contamination from those public water supply wells. Id. All the criteria for the admissibility of Mr. Humann's expert testimony are satisfied: he is well-qualified to testify that the LWD Wells have been impacted by the commingled OU-2 plume, his opinions are reliably based on sufficient facts and data, and his opinions will likely assist the trier of fact in arriving at the truth. Any questions that Defendants have regarding the data relied on and the conclusions reached by Mr. Humann go to the weight and not the admissibility of Mr. Humann's testimony. Cedar Petrochemicals, 769 F. Supp. 2d at 285. As such, it is respectfully submitted that the Exclusion Motions relating to Mr. Humann should be denied with prejudice in their entirety.

III. THE EXPERT TESTIMONY OF TIMOTHY J. HAZLETT, Ph.D. SHOULD NOT BE EXCLUDED

The Town has also designated Dr. Hazlett from H2M as an expert witness in this case in regard to the impact of groundwater contamination emanating from the Northrop Grumman and NWIRP sites (commingled with the groundwater contamination emanating from the Hooker/Ruco site) on the LWD Wells. Based on his training, education, and extensive hydrogeologic experience and expertise, Dr. Hazlett's role in this case was principally evaluating the capture zones of the LWD Wells to determine whether they could have intercepted the contamination from the OU-2 plume to impact the LWD Wells. Dr. Hazlett concluded to a reasonable degree of certainty that

the commingled OU-2 plume from the Northrop Grumman, NWIRP, and Hooker/Ruco sites is the likely source of the VOC contamination impacting the LWD Wells. H2M Expert Report, pp. 5-9 and Figures 1-3.

Northrop Grumman, and the rest of the defendants, contend that Dr. Hazlett's opinion that Freon-113 travels faster in groundwater than TCE and Dr. Hazlett's capture zone model are unreliable. Northrop Grumman Memorandum of Law in Support of Motion to Exclude Testimony of Dr. Hazlett ("NG MOL Hazlett Excl. Mot."), pp. 7-16. Contrary to Defendants' claims, Dr. Hazlett's expert testimony is admissible because Dr. Hazlett is sufficiently qualified as an expert, his expert opinions are reliable and based on sufficient facts and data, and his expert opinions will assist the trier of fact in this matter.

A. Dr. Hazlett is Qualified to Be an Expert in this Action

Dr. Hazlett is a Senior Hydrogeologist and Environmental Scientist with H2M and has worked in that capacity since 2016. Hazlett Decl., ¶ 1. Dr. Hazlett attained a Bachelor of Science degree in geology in 1990 from Rensselaer Polytechnic Institute; a Master of Science degree in geological engineering in 1992 from the University of Missouri – Rolla; a Master of Arts degree in hydrogeology in 1993 from Johns Hopkins University; and a Ph.D. degree in hydrogeology in 1998 from Johns Hopkins University. Id.

Dr. Hazlett has over twenty-five (25) years of experience as a hydrogeologist and environmental scientist in the water, environmental and mining sectors. Id. at ¶ 2. He has focused his career on the use of mathematical and numerical models applied to geoscience and engineering consulting problems with specific expertise in the areas of groundwater contamination, remediation system design support, surface water-groundwater interaction, geothermal, saltwater intrusion, and karst. Id. Prior to working for H2M, Dr. Hazlett was the Director of Water

Resources Business Development at HydroGeoLogic, Inc. and was also previously the head of DHI North America, where he was involved with water-wastewater utility and water resource management studies across North America. Id. Dr. Hazlett is a past member of the American Water Works Association ("AWRA") and an Expert Member of the AWRA (New Jersey Chapter) Future Risk Committee; a current Associate Editor of the Hydrogeology Journal; and a member of the International Association of Hydrogeologists. Id. at ¶ 6.

As a Senior Hydrogeologist with expertise in Water Resources Modeling, Dr. Hazlett utilizes his extensive background and experience in applying mathematical and numerical models to geoscience and engineering consulting problems that generally involve groundwater contamination or have a groundwater component. Id. at ¶ 5. In this matter, Dr. Hazlett's focus was to analyze the available data to model and determine the size and shape of the capture zones for the LWD Wells. The capture zones represent from where in the Magothy Aquifer water will flow to the LWD Wells over a given period of time. Id. at ¶ 9. As a result, the capture zone analysis is useful to evaluate: i) from where in the aquifer a pumping well draws water supply, ii) the amount of time the water travels to the well from within the capture zone, and iiii) whether that zone intersects with any known contamination. Id. Unlike the groundwater modeling conducted by or on behalf of Northrop Grumman and/or the Navy with respect to the OU-2 plume, that modeling was intended to look at the entire comprehensive system with every well, every contaminant, with a heavily parameterized approach. Id. at ¶ 10. Dr. Hazlett's focus was different – his focus was to determine the capture zone analysis of the LWD Wells independently of the contaminant data analysis and then look at when overlying the contaminant data with the capture zones, whether the contamination of any known location fell within the depicted capture zones. Id.; Exhibit "7", H2M Expert Report, Figure 2.

Dr. Hazlett's knowledge, training, education, and experience in the area of hydrogeology makes him unequivocally qualified to testify in this case regarding the impact of the commingled groundwater contamination emanating from the Northrop Grumman, NWIRP, and Hooker/Ruco sites on the LWD Wells. See Olin Corp. v.Certain Underwriters at Lloyd's, 468 F.3d 120, 133 (2d Cir. 2006) ("Here the district court found Rovers to be extremely well-qualified, a conclusion that LI have not contested. In fact, Rovers testified that he specializes in hydrogeology, the study of how groundwater moves through soil, and that he focused his masters degree work on disposal of waste on land and the fate and transport of chemicals, in other words the migration of water through contaminants and the impact on the environment, precisely the issue in this case.").

B. Dr. Hazlett's Opinions are Based Upon Reliable Facts and Data

In conjunction with Mr. Humann's opinion regarding the resultant commingling of various contaminant plumes emanating from the Northrop Grumman, NWIRP and Hooker/Ruco sites, Dr. Hazlett determined to a reasonable degree of hydrogeological certainty that, based on the physical and chemical characteristics of TCE and Freon-113 (the primary contaminant impacting the LWD Wells), that segmentation of the commingled plume has occurred and is occurring as contaminants move further south along groundwater flow lines. Exhibit "7", H2M Expert Report, pp. 6-7; Hazlett Decl., ¶ 16.

In the area of the LWD Wells, the approximate bottom two hundred feet of the Magothy Aquifer consists of sands and gravels. Exhibit "7", H2M Expert Report, p. 6; Hazlett Decl., ¶ 15. Deep public supply wells in the Magothy Aquifer, including the LWD Wells, are typically screened in these gravel zones near the bottom of the Magothy since they are highly productive. Id. The gravel zones in the Magothy Aquifer convey the majority of groundwater in the area, more

or less from north to south. Id. As primary pathways for groundwater flow, the gravel channels also all rapid flow and transport of contaminants. Id.

In regard to transport of Freon-113 and TCE in groundwater flow systems, both chemicals' densities, dynamic viscosities, and hydraulic conductivity are important considerations. Id. at ¶¶ 17-18. Hydraulic conductivity would measure how easily do Freon-113 and TCE move through the geologic material (primarily sand and gravel). Id. at ¶ 18. The densities of both Freon-113 and TCE are both greater than water. Id. at ¶ 17. Dr. Hazlett calculated the hydraulic conductivities of Freon-113 and TCE by breaking the conductivity into its component terms (intrinsic permeability, density of the contaminant, and gravity), which are all divided by dynamic viscosity of the contaminant. Id. at ¶ 18.

By doing so, Dr. Hazlett determined that relative to water, Freon-113 is approximately 1.56 times as dense and 0.56 times as viscous. Id. at ¶ 19. Relative to water, TCE is 1.46 times as dense and 0.61 times as viscous. Id. That means that for the same volume of Freon-113, TCE, or water, Freon-113 will feel the heaviest, but will also flow when poured out much more easily than water. Id. Contrasted with TCE, Freon-113 will feel heavier for the same volume and will also flow more easily. Id. The differences in density and viscosity speak directly to the fate and transport of Freon-113 and TCE in the Magothy Aquifer. Id. Based on his hydraulic conductivity calculations, Dr. Hazlett opines that generally, Freon-113 will always outpace TCE, which will always outpace water flowing through porous media such as that found in the Magothy Aquifer. Id. at ¶ 20. Thus, Dr. Hazlett concluded that TCE and Freon-113 groundwater plumes of similar quantity sources from the same place and time would tend to separate by approximately 8% by density and viscosity effects alone under otherwise identical subsurface conditions. Id. He further concluded that the separation would become larger in the absolute sense as the plumes lengthened.

Id. Dr. Hazlett has done a similar analysis to evaluate relative velocity of chemicals in groundwater in the past, including writing codes to simulate multiphase-type flow. Id.

The principles applied by Dr. Hazlett were premised on groundwater plumes of similar quantity of Freon-113 and TCE sourced from the same place and time in order to analyze how the contaminants behave under the same circumstances. Id. at ¶ 21. Under Dr. Hazlett's analysis, if you put Freon-113 into the ground and you put TCE into the ground under the same conditions and you let those chemicals get into the groundwater system and flow along, based purely on the physics of the chemicals themselves, they tend to have different velocities in groundwater over time. Id. As the chemicals move further away from where they entered the ground, a differentiation is likely in the arrival times with Freon-113 typically arriving faster. Id. Whether the contaminants are partly or completely dissolved in groundwater some difference in separation would still be expected because the ratio between the two chemicals of their transport times will stay the same. Id. at ¶ 22.

The analysis performed by Dr. Hazlett was to show that there are conditions under which the plume of TCE and a plume of Freon-113 will differentiate, especially the further downgradient from the source you go. Id. Those conditions are the ones where density and viscosity of Freon-113 and TCE in a relative sense in terms of transport will have the potential to differentiate spacing over time. Id. The relative densities and viscosities have an effect on transport regardless of the concentration levels of the chemicals. Id. Issues like the retardation factor are dependent on location and the distribution of organic material in the Magothy Aquifer, at any give location, while Dr. Hazlett's analysis avoids differentiation and focuses on the identical subsurface conditions in order to determine the velocity of Freon-113 and TCE in groundwater under the same conditions. Id.

Dr. Hazlett's analysis of the groundwater velocity between Freon-113 and TCE is comparable to the analysis which the Second Circuit approved in Gussack Realty Co.. There, in agreeing that the expert witness testimony was admissible, the Second Circuit held that, "Plaintiffs' experts here were not trying to account for the otherwise inexplicable presence of contamination on plaintiffs' property. Instead, they provided theories describing how, in the abstract, it would be possible for contamination to flow from the Xerox site to the Gussack property." 224 F.3d at 95. Here, Dr. Hazlett opines that TCE and Freon-113 groundwater plumes of similar quantity sourced from the same place and time would tend to separate by approximately 8% by density and viscosity effects alone under otherwise identical subsurface conditions. That opinion provides an explanation based on the hydraulic conductivities of those chemicals in groundwater that there are conditions under which the plume of TCE and a plume of Freon-113 will differentiate, especially further downgradient from the source. Under the relevant caselaw, Dr. Hazlett's opinion regarding Freon-113 and TCE as groundwater contaminants is based on reliably sufficient data and, therefore, is admissible. To the extent that Defendants question the assumptions made by Dr. Hazlett or whether there is a sufficient basis for Dr. Hazlett's conclusion, those issues go to the weight not the admissibility of Dr. Hazlett's expert testimony. Cedar Petrochemicals, Inc., 769 F. Supp. 2d at 285-86.

With respect to Dr. Hazlett's capture zone analysis for the LWD Wells, that analysis also satisfies the criteria for admissibility in this case. The approach chosen by Dr. Hazlett is known as the analytical element approach and was invented in the 1980s by Professor Otto Stack at the University of Minnesota. Hazlett Decl., ¶ 11. The advantage of an analytical element approach is that it takes analytical equations and instead of having infinite aquifer it allows for analyzing a regional problem very computationally efficiently with areas of detail, which in this case would

be the LWD Wells. Id. The model does not rely upon discretization of areas or cells; instead, only internal and external boundaries are discretized. Id. The analytical element approach allows the user to superpose multiple elements into a single solution such that analytical solutions can be realized for complex boundary conditions. Id. This allows models with complex geometries, multiple aquifer layers, and multiple boundaries to be solved efficiently. Id.

The analytical element approach is a recognized method in groundwater modeling. Id. The United States Environmental Protection Agency has adopted an analytical element approach for wellhead protection studies known as Wellhead Analytic Element Model (WhAEM). Id.[8] The WhAEM software has the same theoretical basis in analytical elements as the code (AnAqSim) Dr. Hazlett used for the work performed in this case. Id.

For purposes of judicial economy, the Court is respectfully referred to the H2M Expert Report, pp. 7-9 and Figures 2 and 3 and the Hazlett Declaration, ¶¶ 23-41 for a detailed discussion of the parameters and the process utilized by Dr. Hazlett in constructing the capture zone analysis of the LWD Wells. Of note, the AnAqSim software utilized by Dr. Hazlett is an analytic aquifer simulator which uses the analytic element approach to simulate capture zones for groundwater sources like water supply wells and is an accepted analytic aquifer simulator and tool within the community of hydrogeologists who engage in groundwater modeling. Hazlett Decl., ¶ 24. In addition, in August 2018, the consultant for the Navy prepared a report regarding the Trigger Values Development – Addendum #2 (the "2018 Trigger Values Report) to the OU-2 Offsite Groundwater PWSCP. Hazlett Decl., ¶ 31; Exhibit "74", 2018 Trigger Value Report. The purpose of the 2018 Trigger Values Report was to report on the trigger values developed for the additional

[8] Occidental's purported expert hydrogeologist in this case used the WhAEM analytical element approach model.

outpost monitoring wells, including BPOW 4-1R and 4-2R to provide early warning of the impact of the OU-2 plume to LWD Well 13. Id. Notably, the 2018 Trigger Values Report applied an analytical element model to simulate transport for each outpost well to the supply wells; the model chosen was a two-dimensional model like Dr. Hazlett's; and the key assumptions within the modeled area were the same key assumptions made by Dr. Hazlett in his capture zone model. Hazlett Decl., ¶¶ 32-33; Exhibit "74", 2018 Trigger Values Report, p. 4. The Navy's consultant concluded that "the modeling is constructive in that it applies a uniform set of conservative parameters to estimate plume movement and to develop early warning values for public supply wells with associate outpost wells." Id. at p. 8.

The capture zone for a well is the region of the aquifer that contributes water to that well. Hazlett Decl., ¶ 36. Based on Dr. Hazlett's capture zone analysis for the LWD Wells, he concluded that the LWD Well 13 capture zone for the region for the region of the aquifer that contributes water to that well contains within it numerous sampling points where Freon-113 was detected such that any contaminant falling within those capture zones will eventually impact the well. Id. at ¶¶ 36-37; H2M Expert Report, pp. 8-9 and Figure 3. With respect to LWD Wells 7A/8A, the capture zone analysis showed intersection with Freon-113 sampling points and could have easily captured over the course of the 30-year travel period some of the very contaminated Freon-113 sampling spots as LWD Well 13. Id. at ¶ 38; H2M Expert Report, pp. 8-9 and Figure 3. Dr. Hazlett found that the capture zones of the LWD Wells overlap known sampled Freon-113 hotspots and detection locations within the OU-2 monitoring well network and that a reasonable interpolation of concentrations of Freon-113 between the OU-2 monitoring well RE-131 and VPB-169 locations clearly demonstrates the intersection between the well capture zones of the LWD Wells and the Freon-113 plume. Id. at ¶ 39; H2M Expert Report, pp. 8-9 and Figure 3.

Dr. Hazlett's opinions concerning the movement and mobility of groundwater and site-related contaminants and the analysis of the capture zones of the impacted LWD Wells apply equally to any source contributing VOC contamination to the OU-2 plume, including the Northrop Grumman, NWIRP, and Hooker/Ruco sites. Id. at ¶ 40. Consistent with the opinions rendered by Mr. Humann, Dr. Hazlett opined that the groundwater contamination emanating from the Northrop Grumman, NWIRP, and Hooker/Ruco sites which migrate off of those sites and contributed to the OU-2 plume is responsible for the VOC contamination which has impacted the LWD Wells necessitating the implementation of wellhead treatment to remove that contamination from those public water supply wells. Id. at ¶ 41. Dr. Hazlett's capture zone analysis of the LWD Wells is based on reliably sufficient scientific data and, therefore, is admissible. To the extent that Defendants question the assumptions made by Dr. Hazlett in the design of the capture zone model or whether there is a sufficient basis for Dr. Hazlett's conclusion, those issues go to the weight not the admissibility of Dr. Hazlett's expert testimony. Cedar Petrochemicals, Inc., 769 F. Supp. 2d at 285-86.

CONCLUSION

Based on the foregoing, it is respectfully submitted that the Court deny the Exclusion Motions with prejudice in their entirety.

Dated: Garden City, New York
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